

tive in the marketplace. For example, a service with rain availability of 99.7% (26 hours of outage per year) rather than 99.99% (52 minutes of outage per year) would be unacceptable to most business communications users. Additionally, reduced cell size would increase network capital cost to an unacceptable level that would render the service too expensive to be competitive in the marketplace.

Third, the study makes invalid assumptions about the technical feasibility of certain DEMS design elements and system components (e.g., increased transmitter power) for use in the 24 GHz band that, if practical, would already have been employed in the 18 GHz band.

The Conclusions Of The Hatfield Study Are Incorrect

The Hatfield Study contains three erroneous "technical conclusions" based on faulty information and/or analysis. These are as follows:²

- First, it concludes that the Commission's technical analysis is not plausible because it could not or chose not to confirm the Commission's underlying assumptions;
- Second, it concludes that the Commission's assumptions are devoid of any supporting rationale; and
- Third, it concludes that relaxing some of the constraints in the Commission's assumptions could reduce the amount of spectrum necessary.

The first Hatfield "conclusion" is wrong simply because the Commission's underlying assumptions are indeed sound and based on the 18 GHz DEMS coverage, capacity and reliability. These reasonable assumptions lead to the equally reasonable conclusion on the part of the Commission that there is a requirement of at least 400 MHz of spectrum for DEMS in the 24 GHz band.

The second Hatfield "conclusion" is really the same as the first. The Commission's assumptions, far from being "devoid of any rationale," are based correctly on the capabilities of 18 GHz DEMS baseline design.

The third Hatfield "conclusion", that "relaxing some of the constraints" in the Commission's assumptions could reduce the

² Hatfield Study at 8.

amount of spectrum necessary, is an attempt to revise that analysis in a way that would increase the costs and decrease the performance of the DEMS service when implemented at 24 GHz.³ If the Commission were to abandon its goal to achieve equivalence by allocating enough 24 GHz spectrum to preserve 18 GHz DEMS performance, then of course the 24 GHz allocation could be smaller. But this would irreparably undermine the DEMS service.

Increased Rain Attenuation At 24 GHz Is The Key Issue

The largest single difference between radio propagation at 18 GHz and at 24 GHz is the attenuation due to rain. For an availability of 99.99%, in ITU-R rain zone K, the difference in rain attenuation between 18 GHz and 24 GHz is approximately 10 dB over a 5 km path.

The Hatfield Study tries to cast doubt on this by calling it an "allegation"⁴ when clearly it is not. This difference in rain attenuation is fully supported by internationally accepted rain propagation models adopted by the ITU.⁵ The Commission's reliance on such widely accepted engineering principles is beyond question.

Moreover, the 18 GHz DEMS design was based on 99.99% availability (52 minutes of outage per year), not the lower availability of 99.7% (26 hours of outage per year) as cited in the Hatfield Study. The Hatfield Study cites a paper⁶ which states that the difference in rain attenuation between 18 GHz and 24 GHz is only about 2 dB for a 99.7% availability. This memorandum, however, fails to consider that the baseline 18

³ It is also an admission that the Commission's decision on the amount of the spectrum needed to relocate DEMS was the result of a rational analysis, based on the performance of 18 GHz DEMS and the constraint that the service at 24 GHz should be equivalent in performance to the service at 18 GHz.

⁴ Hatfield Study at 1.

⁵ See Rec. ITU-R PN.530-5; Rec. ITU-R PN.837-1; and Rec. ITU-R PN.838.

⁶ See Memorandum from Mark Sturza to Russ Daggatt dated December 5, 1996, attached to Memorandum from Chris Murphy, June 3, 1997 (available in the Commission's record in this proceeding).

GHz DEMS design employed a 99.99% availability, and that the commercial marketplace requires a rain availability of 99.99%, rather than 99.7%, as shown by advertisements for other wireless local communications services.⁷

In inappropriately relying on this 99.7% availability, the Hatfield Study has essentially redesigned the 24 GHz DEMS system in a manner that is not competitively viable and that is not equivalent in performance and cost to the 18 GHz DEMS system design. The approximately 8 dB difference in path loss between 99.99% and 99.7% cannot simply be "wished away," nor can the Hatfield Study be allowed to substitute its view of the level of availability that is needed to compete in the marketplace.

Shannon's Law Was Misapplied In The Hatfield Study

The Hatfield Study takes a basic engineering principle, Shannon's Law, and misuses it by applying it to two different frequency bands. While it might be valid for comparing the relative capacity of 100 MHz and 400 MHz at the same frequency, it is not correct to say that "going from 100 MHz of bandwidth to 400 MHz of bandwidth would increase the capacity available to a DEMS licensee by a factor of four"⁸ when the 100 MHz is at 18 GHz and the 400 MHz is at 24 GHz. The increased path attenuation and impracticality of generating higher power levels at 24 GHz compared with 18 GHz makes it impossible to deliver the constant signal-to-noise/interference ratio to the same coverage area to which the Hatfield Study refers.

Indeed, the Appendix of the Hatfield Study demonstrates this coverage difference. It shows that a system that can reach 5 km at 18 GHz can reach only 3.6 km at 24 GHz "for a constant signal-to-noise/interference ratio."⁹ It cannot reach the

⁷ WinStar itself offers a 99.999% availability. See Attachment A, WinStar Internet World Wide Web Page at [<http://www.winstar.com/indexCarrServ.htm>].

⁸ Hatfield Study at 2.

⁹ More correctly, using the ITU-R rain model for Region K, 99.99% availability, the path loss for 5 km at 19.26 GHz is the same as the path loss at 3.2 km at 25.25 GHz.

same coverage area—one of the keystone requirements for equivalence.¹⁰ Thus, the Hatfield Study fundamentally misapplies Shannon's Law.

Transmitter Power And Antenna Gain Benefits, If Available And Practical At 24 GHz, Would Already Have Been Employed At 18 GHz

The Hatfield Study would arbitrarily redesign the 24 GHz DEMS system by increasing transmitter power and antenna gain, but if these techniques are practical in the 24 GHz band, they likely would already have been employed at the 18 GHz band. The study notes correctly that due to increased rain losses at a given range at 24 GHz, "the capacity of the available bandwidth (i.e., 100 MHz) is reduced"¹¹. It claims incorrectly, however, that this capacity can be restored by "simply increasing the transmitter power and/or by increasing the gain (size) of the transmitting/receiving antennas."¹²

Any increase in transmitter power at 24 GHz also would be attainable and implemented at 18 GHz. However, even doubling of transmitter power would have little impact at 24 GHz. A 3-dB increase in power could increase the DEMS coverage from 3.2 km to 3.6 km with 99.99% rain availability at 25.25 GHz. This leaves the system well short of the baseline 5-km coverage capability at 18 GHz.¹³

Increased Nodal Station sector antenna gain at 24 GHz compared to 18 GHz is not possible because the gain of sector beam antennas depends on the number of sectors and the re-

¹⁰ A reduction in service radius from 5 km to 3.2 km would result in an increase in the number of required Nodal Stations by a factor of about 2.5. This would result in a substantial increase in network cost.

¹¹ Hatfield Study at 2.

¹² Id.

¹³ The 18 GHz DEMS baseline design is based on a 5 km coverage radius, but some actual installations might achieve greater range by using a narrower sector beam Nodal Station antenna with larger gain, or by using point-to-point links. Other actual installations might employ lower gain antennas or lower power levels in order to control intra-system interference or because of line-of-sight constraints.

sulting beamwidth; the beamwidth is independent of the frequency band. Increasing the number of sectors and narrowing the beamwidth, if it were employed at 24 GHz, would also be employed at 18 GHz. Thus, there are no Nodal Station antenna gain improvements at 24 GHz that are not also available at 18 GHz.

For User Station antennas, simply increasing the size is not a routine option due to non-technical constraints such as zoning regulations and aesthetics and technical constraints such as wind loading. Most importantly, if an increase in gain could practically be achieved by increasing size, it would have already been done at 18 GHz.¹⁴

Thus, if such transmitter power and antenna gain changes were an easy solution to the capacity problem at 24 GHz, then they would have been implemented at 18 GHz, thereby establishing an even larger 18 GHz system capacity which would in turn still be obtainable at 24 GHz only by increasing the spectrum allocation.¹⁵

The Commission Was Conservative Regarding Trunking Efficiency

The Hatfield Study discusses trunking efficiency and dynamic allocation of spectrum¹⁶ as if it were an efficiency mechanism

¹⁴ The Hatfield study correctly points out that the increase in antenna gain for a given user-station antenna between 18 and 24 GHz "exactly compensates" any additional "free-space" path loss.

¹⁵ The Hatfield Study also argues (at p. 3) the principle that as the demand grows within a cellular-designed system, the operator has an incentive to reduce cell sizes by using lower power levels, install more cell sites, achieve greater frequency reuse, and thereby increase capacity. It then applies the principle to the relocation of DEMS from 18 GHz to 24 GHz by arguing that these power reductions could be used instead to compensate for the increased rain attenuation at 24 GHz. The principle itself is not applicable to DEMS since greater frequency reuse and increased capacity would be achieved by using narrower sector beam antennas at the Nodal Station rather than by smaller cell sizes.

¹⁶ Hatfield Study at 3.

that the Commission ignored¹⁷, but rather than ignoring this factor, the Commission expressly considered it in its analysis.

The use of dynamic bandwidth allocation (DBA) in the DEMS network where possible, combined with fixed bandwidth allocation (FBA), is part of the Commission's analysis. In fact, the Commission used a conservative assumption regarding traffic trunking efficiency in arriving at the 400 MHz spectrum requirement - based on 0.2 erlangs per subscriber. While the Hatfield Study states that this assumption "plays a major role in the determination of the amount of increased channel bandwidth needed,"¹⁸ it fails to acknowledge that the more typical assumption of 0.1 erlangs per subscriber would reach the conclusion that even more spectrum is needed.

Thus, the Commission's analysis is based on reasonable assumptions about the effect of traffic loading and trunking efficiency.

The Commission Considered Both Real-World RF Amplifier Characteristics And Complex Modulation Techniques

Although the Hatfield Study implies otherwise, factors such as the characteristics of RF amplifiers, including output backoff requirements and high-order modulation techniques, were taken into consideration in the Commission's technical analysis. In fact, the Commission's analysis took advantage of the reduced backoff allowed by using a single carrier in the RF amplifier to decrease the need for additional spectrum.

Likewise, the Commission's analysis incorporates the use of multiple carriers in connection with dynamic bandwidth allocation and high-order modulation (e.g. 16-TCM) where possible within the DEMS cell to increase the DEMS spectral efficiency and minimize the need for additional spectrum.¹⁹

¹⁷ Id. at 7.

¹⁸ Id. at 4.

¹⁹ The Hatfield Study fails to acknowledge the use of higher level modulation techniques within the DEMS cell when it states that "the Commission assumes that the DEMS operators will have to go to lower level modulation techniques in order to provide coverage out toward the edges of a cell." Hatfield Study at 8.

The Hatfield Study Misinterprets The Commission's Supporting Documentation

The Hatfield Study exhibits considerable confusion about DEMS cell coverage, and creates more confusion by misinterpreting the Commission's supporting documentation.²⁰ First, it claims that the "radius of coverage would be reduced to about 3.75 km assuming no other changes in equipment characteristics."²¹ Then, it asserts "that if the typical cell radius of coverage at 18 GHz were really 3.75 km rather than 5 km, then no additional spectrum would be required to provide comparable coverage and capacity."²²

These statements are seriously flawed. First, the Hatfield Study's premise is factually incorrect -- the Commission's supporting documentation shows that at 24 GHz the coverage radius would be reduced to 2.84 km (not to 3.75 km) for the baseline case of 16-TCM in the DBA mode. The 3.75 km radius is for 16-TCM in the FBA mode. In any event, the statement is simply irrelevant to the Commission's goal of providing equivalent service areas at 24 GHz for DEMS systems designed with a baseline 5 km cell radius at 18 GHz. In fact, the Study concedes that this statement is superfluous in that the Study accepts in the very same sentence that the DEMS radius of coverage at 18 GHz is 5 km - not 3.75 km.

Conclusion

Although titled a "technical assessment" of the Commission's DEMS relocation decision, the Hatfield Study is little more than a textbook exercise based on hypothetical DEMS designs. If a 24 GHz DEMS system could be designed from scratch, if it were not necessary to maintain 18 GHz performance, 18 GHz path lengths, 18 GHz rain availability and 18 GHz capacity, if there were no practical limits to 24 GHz output power or 24 GHz antenna gain -- if all of these factors were true -- then less spectrum would be needed for DEMS at 24 GHz. The Commission, however, made the reasonable decision that it was necessary and equitable to maintain 18 GHz performance levels and operating characteristics when relocating DEMS to 24 GHz.

²⁰ As attached to Memorandum from Chris Murphy, June 3, 1997.

²¹ Hatfield Study at 5.

²² Id., emphasis added.

The Hatfield Study fails to make the case that Commission made wrong assumptions and it fails to provide any factual evidence that the assumptions were invalid. In fact, the Hatfield Study fails to provide any facts whatsoever. As a mere exercise in "what might have been," it is largely irrelevant to the Commission's decision to relocate DEMS to 24 GHz.

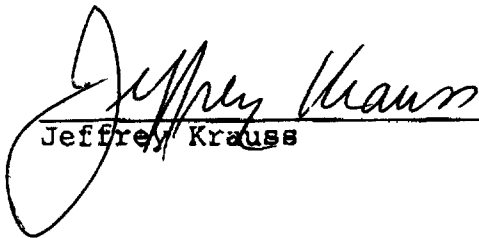
Qualifications Of The Authors

Eric Barnhart, a registered Professional Engineer, is Chief of the Communications and Networking Division of the Georgia Tech Research Institute. He is a Principal Research Engineer and a member of the Institute Council of Fellows. His areas of expertise include wireless broadband communications, microwave and millimeter wave propagation, satellite communications, and communications systems engineering. His review of the Hatfield Study represents his own views and does not represent the view of the Georgia Tech Research Institute.

Jeffrey Krauss is President of Telecommunications & Technology Policy, a consulting firm in Rockville, MD. Previously, he was Vice President, Corporate Affairs for M/A-COM, Inc., and before that was Assistant Chief of the FCC's Office of Plans and Policy. He holds a Ph.D. in theoretical physics from Case Western Reserve University.

Eric Barnhart

Date: _____


Jeffrey Krauss

Date: 8/6/97

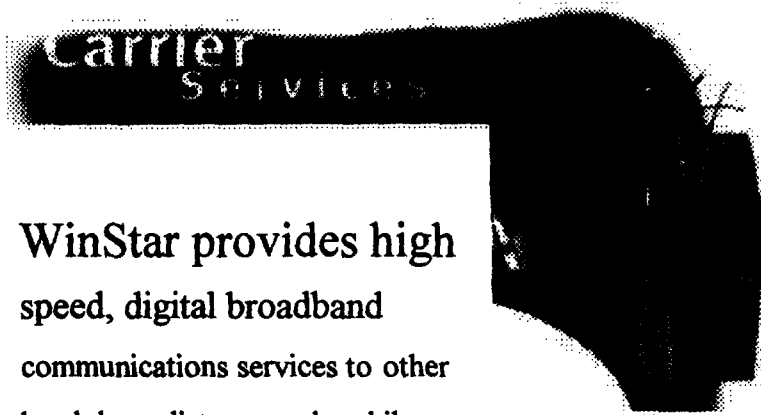
A stylized handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.

Date: August 6, 1997

Jeffrey Krauss

Date: _____

EXHIBIT I
ATTACHMENT A



WinStar provides high speed, digital broadband communications services to other local, long distance and mobile telephone carriers.

Ironically, while most telephone companies typically have extensive regional networks, they do not always have the fiber capacity into buildings needed to provide sophisticated, high-quality telephone services and Internet access. The high cost of providing this "last mile" capacity makes carriers very selective about investing capital in fiber access to buildings. WinStar's Wireless FiberSM service offers a flexible and profitable alternative -- an alternative that can supply the capacity to meet increased demand, swiftly fill a backlog of orders, or simply save money.

Wireless Fiber service provides telecommunications carriers with quick and cost-efficient solutions for:

- * extending the reach of an existing fiber ring
- * providing local transport
- * serving as the primary link between buildings in a private network application
- * interconnecting cell sites in a PCS/Cellular networks
- * adding route diversity or backups in any of these applications

Carriers typically use WinStar's Wireless Fiber service to:

- * extend their networks to new buildings
- * reduce their time to market
- * increase capacity
- * optimize their working capital

Proven Technology

In 1996, WinStar passed a number of rigorous technology trials conducted by the largest telecommunications companies in the U.S. WinStar proved that its Wireless Fiber service is the functional equivalent of fiber in both

performance and reliability standards. It delivered:

- * 10^{-13} bit error rate (unfaded)
- * 99.999% availability

This positive review by our peers in the industry is the best testament to the quality of WinStar's technology and operations.

The WinStar Wireless Fiber Network

WinStar's licenses in the 38 GHz part of the radio wave spectrum are the "real estate" in which WinStar lays "high capacity bandwidth" for its nationwide local telecommunications networks. The company has secured these licenses in over 150 top markets in the United States. Geographically, they cover more than 60% of America's small- to medium-sized businesses.

Conventional fiber optic cables provide high speed transmission of voice, data, and images, but they require a large pipe to enclose it in buildings and in the ground. WinStar offers the same capability without digging up the streets. And our Wireless Fiber service can be installed quickly. All it takes is a pair of one- to two-foot diameter antennas aimed at each other atop roofs or in windows. Our Wireless Fiber transceivers typically have a range of up to five miles, but WinStar places them closer together to assure greater reliability. In turn, these devices are linked through a "hub-and-spoke" network to an existing fiber optic network already in the ground or to WinStar's own local switching center.

WinStar has work underway to create Wireless Fiber hub-and-spoke networks in cities across the country. In our top markets, we have targeted 8,000 buildings with no access to broadband telecommunications services.

EXHIBIT II

One, most of those countries did not sign on to the WTO agreement.

Let's talk about opening up the markets and selling some products. Do you know what the grants do? They are the envy of the world. The French, the Germans, the Singaporeans, the Chinese, they all want to know about our grants. They all want to know how we are doing things.

When I go talk to the public official and say to the public official, we are saving lives using this, we are doing telemedicine doing this, we are educating our children, we are preserving our culture with these grants, they want to hear that.

When I come in and say I am from the United States, I know better, open up your market and let me sell you some stuff, their eyes glaze over. But when you talk about how it affects the people who live in their countries, it matters.

And no one in this country knows more about application of technologies than NTIA because we have more than hands-on experience. We have 277 partners who work with us. There may be problems with those grants, Mr. Chairman, and out of the 277—it is like my mother has five children, and she thinks at least one of them went bad, went into politics. Out of 277 children we have in grants, one or two of them may have some problems. And they are toddlers; it is a 3-year old program. Give me direction as to how you want me to do it and I will offer to do it, but please don't think we are sitting here trying to break the law or encouraging people to break the law and please don't denigrate the work of the people I work with every day, which is the most disappointing thing about what I heard this morning.

Mr. MARKEY. If you got out of the government, your mother would have had a perfect record, though.

Mr. TAUZIN. The gentleman's time has expired. The gentleman from Oklahoma is recognized for a round of questioning.

Mr. LARGENT. Thank you, Mr. Chairman.

Larry, I am always tired at the end of your testimony.

Mr. IRVING. So am I. It is an aerobic workout for me and for my friend here.

Mr. LARGENT. It is the proverbial cool drink of water from a fire hydrant.

I wanted to talk to you about a situation that the NTIA was involved in, and I assume you were involved, the digital electronic messaging service, and the 24 gigahertz band where there was some shifting of the allocation of the spectrum. It is a little bit confusing to me how that came about and the security—national security interests that were raised as a rationale for doing that.

You have two companies. One had spectrum that was going to be—they were fearful it was going to be impeded upon and so all of a sudden, the NTIA comes up and says, hey, we happen to have some spectrum available over here; we can accommodate everybody. The FCC followed suit. There was no opportunity for public comment or anything else, and I am just wondering, can you enlighten this committee on that?

Mr. IRVING. It wasn't particularly sinister. You had some competing uses and they couldn't both fit in the same area. The laws of

physics are such that you can't always put certain technologies in the same band without interfering with each other.

The FCC had a problem. They came to us and said, we have to move somebody; is there a place you can move them to. They needed a relatively small portion of our spectrum to move. There were only two areas in which there was going to be an interference problem, as I understood it. We had to make the move nationally, however, because all of the equipment the military used was national equipment and it had to be useful anywhere.

The Commission had a problem. They asked if there was a way we could move, we took a look, we asked the constituents in the Defense Department if it was possible to do it, they said it was, we made a slight shift and it solved a problem. There was no need for public notice or hearing as best we could tell. And we were trying very hard to make sure that commitments the Commission made were able to be honored and making sure that our national security needs were going to be met. There was no behind the scenes—I asked my staff to look into it and they did.

Mr. LARGENT. And yet on your Web site, you talk about that the NTIA has no spectrum reserves and it only uses what it needs to provide critical services to the public.

Mr. IRVING. That is consistent.

Mr. LARGENT. This spectrum that you took was not used for the public, this was used for two private companies that the spectrum was reallocated for.

Mr. IRVING. That is somewhat inconsistent—well, my statement is consistent. We moved our people to other bands that we already had, and we have lots of shared uses and there are occasions when we move from primary to secondary status. There are occasions when we ask for primary status working with the FCC. All this was a change in status. It was a shared spectrum. We didn't have exclusive use, as I understand it.

I can't find Dick in my eyesight right now, but I believe what we did was consistent. What we have always tried to do, we try to be accommodating. I move—well, I don't move, my spectrum guys move people around every day to accommodate public sector and private sector uses. There are times the Navy is somewhere and the Army wants to be there. We move people all the time, but we don't use any more spectrum than we absolutely need. I don't want to waste spectrum. We don't have exclusive use of very much spectrum. I think it is 1.4 percent of all the spectrum's exclusive use by the Federal Government. Most the time we are in there with somebody else. Most the time we are trying to move our people around in a way that makes sense. That is justifiable legally and justifiable technologically, and that is all we did on this one.

Mr. LARGENT. So what you are saying is this is something you would have done for anybody.

Mr. IRVING. This is something, had the FCC come to us and said we need to make this move, we have got a problem, can you accommodate us, we would do the same kind of computer run and see if it was possible to do it. If not, we would kick it back and say no, but we do it on a consistent basis.

I sat with people the other day talking about LEOs. I talk with people about article 15 devices. I sat with people about—we did

some work at our labs trying to make sure when planes fly over Florida they don't disrupt the broadcasting, and we thought about maybe having a change where our AWACS was stationed or located so we don't interrupt Florida broadcasters. We have lots of those kinds of issues we deal with every day.

Mr. LARGENT. Well, my question would be, do you think that it is a good policy for the NTIA to have to make those kinds of shifts on the spectrum without notice or comment? I mean—

Mr. IRVING. I don't think this is the problem. If the procedure—if somebody is questioning the procedures, I think what we did was both legal, lawful, ethical, and the right thing to do in order to avoid—I mean, one of the things I constantly hear from this committee and others, and I think you are right, is that because of regulatory lag, we are losing billions of dollars of economic activity. We are trying to cut down regulatory lag. If you start expanding every decision we make with regard to a shift of spectrum into either a paper hearing or a hearing on the record, you are going to start seeing losses of billions of dollars of economic activity because there is going to be a lag between the time we can move them and the time they ask for the move.

Mr. LARGENT. Well, I don't have any argument with you there, that is for sure. Do I have any more time, Mr. Chairman?

Mr. TAUZIN. One additional question.

Mr. LARGENT. One last thing I want to tell you, shift with me here. The FCC is in the process of making some major decisions on universal service and access charges. These, obviously, are going to be very pivotal decisions. Can you comment on what the administration's position is on universal service and the access charges?

Mr. IRVING. On the universal service, we feel very strongly that we need to make sure we take care of rural Americans. We understand that we want to move away from subsidies. As a New Yorker, I understand the concerns about urban Americans, but as somebody who worked for a Texan, and who has worked very closely with this committee, I understand the concerns about rural Americans.

We have worked very closely as a Nation. When people say there are no market failures in America, I like to remind them that but for the policy that this committee and other committees develop, we would not be at 94 percent telephone penetration rate. It is going to cost too much to get it in lots of parts of Oklahoma and Louisiana and lots of parts of west Massachusetts, so we are trying to move from where we are there to a system that works better with fewer subsidies. We believe we can do that and we believe the Commission can do that and we are asking them to do that.

We believe we are reforming the access charge of universal service. Together, we can come up with some ways to drive down the access charges because right now they aren't based on economic cost, at the same time, try to find some ways to shift the subsidies and move the subsidies while preserving the service in rural areas, and we also think it is important, and since you have given me this opportunity, universal service charges with regard to wiring schools and hospitals and libraries is almost specifically for on-line charges, not for equipment, not for determining how to use it, not for networking communities, purely for on-line charges, so that a

EXHIBIT III

357397

APPLICATIONS ACCEPTED FOR FILING

Mar 13, 1991

POINT TO POINT MICROWAVE RADIO SERVICE:

THE FOLLOWING RENEWAL APPLICATIONS HAVE BEEN RECEIVED FOR THE TERM:
2/1/1991 THRU 2/1/2001:

CA 28089-CF-R-91	WHC977	LOCAL AREA TELECOMMUNICATIONS, INC.
NY 28090-CF-R-91	WHD250	LOCAL AREA TELECOMMUNICATIONS, INC.
GA 28091-CF-R-91	WHD251	LOCAL AREA TELECOMMUNICATIONS, INC.
NJ 28092-CF-R-91	WHD260	LOCAL AREA TELECOMMUNICATIONS, INC.
CA 28093-CF-R-91	WHD264	LOCAL AREA TELECOMMUNICATIONS, INC.
PA 28094-CF-R-91	WHD372	LOCAL AREA TELECOMMUNICATIONS, INC.
TX 28095-CF-R-91	WHD373	LOCAL AREA TELECOMMUNICATIONS, INC.
TX 28096-CF-R-91	WHD375	LOCAL AREA TELECOMMUNICATIONS, INC.
DC 28097-CF-R-91	WHF659	LOCAL AREA TELECOMMUNICATIONS, INC.
TX 28098-CF-R-91	WHK817	LOCAL AREA TELECOMMUNICATIONS, INC.
NY 28099-CF-R-91	WHT965	LOCAL AREA TELECOMMUNICATIONS, INC.
CA 28100-CF-R-91	WLA207	LOCAL AREA TELECOMMUNICATIONS, INC.
PA 28101-CF-R-91	WLA373	LOCAL AREA TELECOMMUNICATIONS, INC.
IL 28102-CF-R-91	WLA376	LOCAL AREA TELECOMMUNICATIONS, INC.

ACTIONS TAKEN

NOVEMBER 27, 1991

DIGITAL ELECTRONIC MESSAGE SERVICE:

THE FOLLOWING LICENSED STATIONS ARE CANCELLED FOR FAILURE TO FILE RENEWALS:

FIRST COMMUNICATION GROUP, INC.

FL	WHB407	TAMPA, FL	CH-08
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INTERACTIVE DIGITAL SYSTEM

AZ	WHF646	PHOENIX, AZ	CH-06
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LOCAL AREA TELECOMMUNICATIONS, INC.

CA	WLA207	LOS ANGELES, CA	CH-09
CA	WHD264	SAN FRANCISCO, CA	CH-08
CA	WHC977	SAN FRANCISCO, CA	CH-09
DC	WHF659	WASHINGTON, DC	CH-10
DC	WHF659	WASHINGTON, DC	CH-01
GA	WHD251	ATLANTA, GA	CH-09
IL	WLA376	CHICAGO, IL	CH-08
NJ	WHD260	NEWARK, NJ	CH-09
NY	WHT965	NASSAU, NY	CH-10
NY	WHD250	NEW YORK, NY	CH-09
PA	WLA373	PHILADELPHIA, PA	CH-08
PA	WHD372	PITTSBURGH, PA	CH-09
TX	WHD373	DALLAS, TX	CH-09
TX	WHD375	HOUSTON, TX	CH-09
TX	WHK817	HOUSTON, TX	CH-08

MOTOROLA RECOVERY

CA	WHB425	LOS ANGELES, CA	CH-33
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PUERTO RICO TELEPHONE COMPANY

PR	WHB420	MAYAGUEZ, PR	CH-05
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SATELLITE BUSINESS SYSTEMS

CA	WHB501	SAN FRANCISCO, CA	CH-03
TX	WHB496	DALLAS, TX	CH-03

TYMNET INTERNATIONAL, INC.

CA	WHF356	LOS ANGELES, CA	CH-21
CA	WHF357	LOS ANGELES, CA	CH-21
CA	WHF359	LOS ANGELES, CA	CH-21
CA	WHA644	LOS ANGELES, CA	CH-21
CA	WHA645	SACRAMENTO, CA	CH-04
CA	WHK908	SAN FRANCISCO, CA	CH-04

CORRECTIONS:

DECEMBER 11, 1991

DIGITAL ELECTRONIC MESSAGE SERVICE

ON PUBLIC NOTICE DATED NOVEMBER 27, 1991, THE LICENSED STATIONS FOR LOCAL AREA TELECOMMUNICATIONS, INC. APPEARED AS CANCELLED EFFECTIVE 2/1/1991 FOR FAILURE TO FILE RENEWAL APPLICATIONS. SINCE THEN, IT HAS BEEN BROUGHT TO THE COMMISSION'S ATTENTION THAT RENEWAL APPLICATIONS WERE IN FACT FILED BUT THROUGH AN ADMINISTRATIVE ERROR THEY APPEARED ON PUBLIC NOTICE DATED MARCH 13, 1991 UNDER POINT-TO-POINT MICROWAVE.

THEREFORE, THE DIGITAL ELECTRONIC MESSAGE SERVICE STATIONS LISTED BELOW ARE RENEWED BY THE FILE NUMBER INDICATED AND ARE OPERATIONAL FOR THE TERM: 2/1/1991 THROUGH 2/1/2001.

ANY QUESTIONS CONCERNING THIS MATTER SHOULD BE ADDRESSED TO MS. PATRICIA D. GREEN AT (202) 634-1798.

LOCAL AREA TELECOMMUNICATIONS, INC.

WHC977	28089-CE-R-91	SAN FRANCISCO, CA
WHD250	28090-CE-R-91	NEW YORK, NY
WHD251	28091-CE-R-91	ATLANTA, GA
WHD260	28092-CE-R-91	NEWARK, NJ
WHD264	28093-CE-R-91	SAN FRANCISCO, CA
WHD372	28094-CE-R-91	PITTSBURGH, PA
WHD373	28095-CE-R-91	DALLAS, TX
WHD375	28096-CE-R-91	HOUSTON, TX
WHF659	28097-CE-R-91	WASHINGTON, DC
WHK817	28098-CE-R-91	HOUSTON, TX
WHT965	28099-CE-R-91	NASSAU, NY
WLA207	28100-CE-R-91	LOS ANGELES, CA
WLA373	28101-CE-R-91	PHILADELPHIA, PA
WLA376	28102-CE-R-91	CHICAGO, IL

CERTIFICATE OF SERVICE

I, Kelly N. McCollian, hereby certify that on this 7th day of August, 1997, true and correct copies of the foregoing "Joint Surreply" filed by Digital Services Corporation, Microwave Services, Inc., and Teligent, L.L.C. were served by hand delivery* or by First Class mail, postage prepaid, on the following parties:

Gerald P. Vaughan*
Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, N.W.
Room 5002
Washington, D.C. 20554

Ruth Milkman*
International Bureau
Federal Communications Commission
2000 M Street, N.W.
Room 800
Washington, D.C. 20554

John Cimko, Jr.*
Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, N.W.
Room 5002
Washington, D.C. 20554

Steve Sharkey*
International Bureau
Federal Communications Commission
2000 M Street, N.W.
Room 800
Washington, D.C. 20554

Chris Murphy*
International Bureau
Federal Communications Commission
2000 M Street, N.W.
Room 800
Washington, D.C. 20554

Karl A. Kensinger*
International Bureau
Federal Communications Commission
2000 M Street, N.W.
Room 800
Washington, D.C. 20554

David Horowitz*
Chief, Public Safety and Private
Wireless Division
Wireless Telecommunications Bureau
Room 8010
2025 M Street, N.W.
Washington, D.C. 20554

Lisa Higginbotham*
Public Safety and Private
Wireless Division
Wireless Telecommunications Bureau
Room 8010
2025 M Street, N.W.
Washington, D.C. 20554

Gary M. Epstein
John P. Janka
James H. Berker
Nandan M. Joshi
Latham & Watkins
1001 Pennsylvania Avenue, N.W.
Suite 1300
Washington, D.C. 20004-2505

Glenn B. Manishin
Frank V. Gananelli
Stephanie A. Joyce
Blumenfeld & Cohen
Technology Law Group
1615 M Street, N.W.
Suite 700
Washington, D.C. 20036

David G. Frolio
David G. Richards
BellSouth Corporation
1133 21st Street, N.W.
Suite 900
Washington, D.C. 20036

William B. Barfield
Jim O. Llewellyn
BellSouth Corporation
1155 Peachtree Street, N.E.
Atlanta, GA 30309

Timothy R. Graham
Leo I. George
Joseph M. Sandri, Jr.
Barry J. Ohlson
WinStar Communications, Inc.
1146 19th Street, N.W.
Washington, D.C. 20036

Richard E. Wiley
R. Michael Senkowski
Eric W. DeSilva
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20554


Kelly N. McCollian